



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Handwritten signature

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,168	11/26/2003	Pat A. Bolen	115584-00343	5533

27557 7590 11/01/2006

BLANK ROME LLP
600 NEW HAMPSHIRE AVENUE, N.W.
WASHINGTON, DC 20037

EXAMINER

HARVEY, JAMES R

ART UNIT PAPER NUMBER

2833

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,168

Applicant(s)

BOLEN ET AL.

Examiner

James R. Harvey

Art Unit

2833

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8-16-06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Cancelled Claims

-- The cancellation of claims 11 and 12 has been noted previously.

Claim Rejections - 35 USC § 103

- The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- Claim(s) 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schauer (5230713) in view of Applicant's Admitted Prior Art and further in view of Carroll (6032359).

-- In reference to Claim(s) 1, Schauer shows (cover sheet)

a flexible flat cable 10 (column 3, line 33) having a series of parallel spaced conductors 11 (column 3, line 34) placed between a pair of insulating layers so that a thin layer of conductive material resides on an interior surface of the on of the insulating layers;

at least one end of the cable 10 having the insulating layer removed and exposing the conductors 11 (cover sheet), the conductors 11 being attached to contacts 14 (cover sheet) on a mounting header 17.

However, it is not clear if Schauer shows the particulars of the flexible flat cable having the conductors 11 placed between a pair of insulating layers.

Applicant's Admitted Prior Art shows (figures 1A-1C)

a flexible flat cable 10 (page 3, line 13) having a series of parallel spaced conductors 20 (page 3, line 14; and (figure 1c)) placed between a pair of transparent (page 3, line 15) insulating layers (page 3, line 14); and

at least one end of the cable having the insulating layer partially removed (page 3, line 18; stripped) and exposing the conductors 20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute Schauer's flat cable 10 with Applicant's Admitted Prior Art's transparent cable. One skilled in the art would be motivated to substitute the cables because the transparent cable allows the user to inspect the conductor beneath the transparent insulation for possible irregularities that could cause the conductor to fail to carry the signal.

Both Schauer and Applicant's Admitted Prior Art show conductors on the insulating layers.

However, to the extent that Schauer or Applicant's Admitted Prior Art are not explicit as to the method of the conductors being printed onto one of the insulating layers. the method of forming (i.e. printing the conductors on the insulating layer) the device is not germane to the issue of patentability of the device itself; Therefore, this limitation has been given little patentable weight.

Further, Carroll teaches a dielectric that permits flexible bending with conductors (column 4, line 57) are printed (column 1, line 16) on the insulating layers 42 (figure 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve the terminal to flexible circuit mounting arrangement of Schauer as modified by Applicant's Admitted Prior Art with the teachings of Carroll.

One skilled in the art would be motivated because, as taught by Carroll (column 1, lines 25-29), Carroll's dielectric substrate with printed conducts permits a flexible bending of the substrate to accommodate locating the flexible circuit in applications where a less rigid printed circuit is required.

-- In reference to Claim(s) 6, Schauer shows (cover sheet) a clock spring for a vehicle (column 3, line 1-10) that has

a flexible flat cable 10 (column 3, line 33) having a series of parallel spaced conductors 11 (column 3, line 34) so that a thin layer of conductive material resides on an interior surface of the on of the insulating layers; at least one end of the cable 10 having the insulating layer partially removed and exposing the conductors 11 (cover sheet), the conductors 11 being attached to contacts 14 (cover sheet) on a mounting header 17 which is located in a connection module of the clockspring (column 3, line 1-10) for connection to other vehicular components 3.

However, it is not clear if Schauer shows the particulars of the flexible flat cable having the conductors 11 placed between a pair of insulating layers.

Applicant's Admitted Prior Art shows (figures 1A-1C)

a flexible flat cable 10 (page 3, line 13) having a series of parallel spaced conductors 20 (page 3, line 14; and (figure 1c)) placed between a pair of transparent (page 3, line 15) insulating layers (page 3, line 14); and

at least one end of the cable having the insulating layer partially removed (page 3, line 18; stripped) and exposing the conductors 20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute Schauer's flat cable 10 with Applicant's Admitted Prior Art's transparent cable.

One skilled in the art would be motivated to substitute the cables because the transparent cable allows the user to inspect the conductor beneath the transparent insulation for possible irregularities that could cause the conductor to fail to carry the signal.

However, while both Schauer and Applicant's Admitted Prior Art show conductors on the insulating layers, neither Schauer or Applicant's Admitted Prior Art explicitly teach the method of the conductors being printed onto one of the insulating layers.

The method of forming (i.e. printing the conductors on the insulating layer) the device is not germane to the issue of patentability of the device itself; Therefore, this limitation has been given little patentable weight.

Further, Carroll teaches conductors (column 4, line 57) are printed (column 1, line 16) on the insulating layers 42 (figure 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve the terminal to flexible circuit mounting arrangement of Schauer as modified by Applicant's Admitted Prior Art with the teachings of Carroll.

One skilled in the art would be motivated because, as taught by Carroll (column 2, line 15), there is a need to develop a direct connection of a terminal to a flexible circuit that does not require solder.

-- In reference to Claim(s) 2, Schauer, as modified by Applicant's Admitted Prior Art and Carroll, shows (column 1, lines 1-10) that the mounting header 17 is adapted to be located in a connection module of a clockspring for electrical connection to other components.

-- In reference to Claim(s) 3 and 7, Schauer, as modified by Applicant's Admitted Prior Art and Carroll shows (cover sheet) the contacts 14 on the mounting header 17 are curved (bent; (column 3, line 63).

-- In reference to the recitation “ to provide a larger surface area for connection to the conductors in the flat cable” this is seen to be for the intended use of the claimed structure and is given little patentable weight. Further, Schauer does show that the longitudinal direction of the rectangular area 29 ((column 4, line 52; figure 5)) lies parallel with the length direction of the conductors 11 and if the contacts 14 were not curved (column 4, line 59) they would not provide as large of a surface area to the connecting places 15 of the conductors 11 (column 3, line 58) because both the connecting places 15 and the rectangular area 29 would not share the same longitudinal axis.

-- In reference to Claim(s) 4 and 8, Schauer, as modified by Applicant's Admitted Prior Art and Carroll, shows the conductors in the flat cable 10 (column 3, line 34; Schauer) are terminated at pads 15 (cover sheet; (figure 5; Schauer)) which are soldered (column 3, line 59; Schauer) to the contacts 14 on the mounting header 17.

-- In reference to Claim(s) 5 and 9, Schauer, as modified by Applicant's Admitted Prior Art and Carroll above, teaches (column 4, line 59; Schauer) that the contacts 14 that are mounted on the

header 17 can be straight and teaches circular apertures 24 (column 4, line 40; (cover sheet)) are in the flat cable 10.

However, Schauer, as modified by Applicant's Admitted Prior Art and Carroll above, does not show the contacts 14 are inserted through the circular apertures 24 on the flat cable 10 for electrical connection to the conductors thereon.

Carroll also teaches (figure 2d) that straight contacts 90 are inserted through circular apertures 80 (column 4, line 53; (figure 2d)) on the flat cable 22 and secured to the circular apertures for electrical connection to the conductors 20 thereon.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to improve the contact 14 to flexible circuit 10 surface mounting arrangement of Schauer as modified by Applicant's Admitted Prior Art with the circular aperture 80 teachings of Carroll.

One skilled in the art would be motivated because, as taught by Carroll (column 2, line 15), there is a need to develop a direct connection of a terminal to a flexible circuit that does not require solder.

**** Claim(s) 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schauer, Applicant's Admitted Prior Art and Carroll as applied to claim 1 above, and further in view of Muzslay (5735697).**

-- In reference to Claim(s) 10, Schauer, as modified by Applicant's Admitted Prior Art and Carroll, shows the mounting header 17 (figure 3) is located on the flat cable 10 (figures 3 and 4), and the flat cable 10 further includes two extensions (5,7; “extending lines”; (column 3, line

21)) having connectors 19 ((cover sheet); (column 4, lines 25-30)) on the ends thereof. In reference to the recitation “for attachment to airbag canisters”, this recitation is seen to be for the intended use of the connector and has been given little patentable weight. However, Schauer connector 19 is seen to be able to be used for attachment to any number of electronic components including air bags.

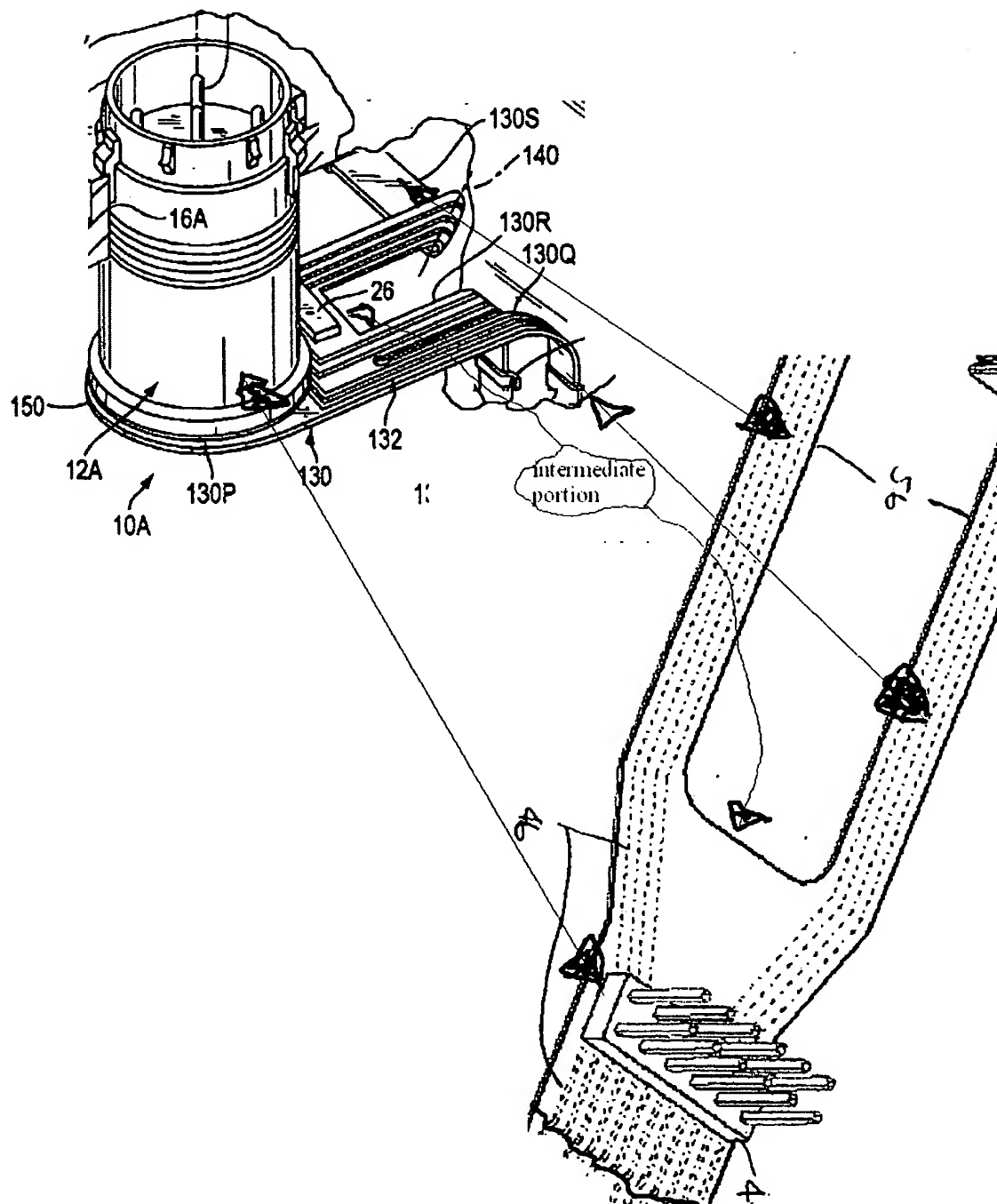
However, Schauer, as modified by Applicant's Admitted Prior Art and Carroll does not show the mounting header 17 is located on an intermediate portion of the flat cable 10 (it is seen to be located on an end portion).

The rearrangement of Schauer mounting header 17 from the end portion of the flat cable 10 to an intermediate portion is seen to be an obvious change in location. since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70..

Muzslay shows (figure 10) substantially the same structure as that recited in claims 5 and 9 (see examiner's figure), Muzslay shows the mounting header 12A is located on an intermediate portion (figure 10; (between the two extreme portions (near the lead line of numerals 130S and 130Q ; (see attached definition from The American Heritage Dictionary))) of the flat cable 130, and the flat cable 130 further includes two extensions (130S, 130Q) having connectors (column 5, lines 20-23) on the ends thereof .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the arrangement shown by Muzslay to change the location of Schauer header from the end to an intermediate portion.

One skilled in the art would have been motivated in order place the connector in a location that meets the customer's preference or intended parameters.



Response to Applicant's Remarks

-- In response to applicant's assertion (page 5, line 15) concerning that there is no suggestion to combine, the examiner disagrees. Applicant's remarks are seen to imply that the motivation given by the examiner does not apply. The Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re.Nomiya, 184 USPQ 607 (CCPA 1975). The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971).

In response to applicant's assertion (page 5, line 17) that the combination of Schauer and Carroll do not render obvious that it is known that conductors reside on an interior surface, the examiner disagrees. Schauer shows (cover sheet) conductors 11 illustrated as dashed line that are seen to be adjacent to the interior surface of the insulating layer of ribbon cable 10.

In response to applicant's assertion (page 5, line 18) that the combination of Schauer and Carroll do not render obvious that it is known that conductors are printed onto insulating layers, the examiner disagrees. Carroll teaches (column 1, line 16) that it is known to have conductors printed onto a substrate.

In response to applicant's assertion (page 6, line 3) concerning the method of forming the conductive layers by the method of printing, the examiner is not convinced that the argument

makes the claims allowable. Carroll teaches (column 1, line 16) that it is known to have conductors printed onto a substrate and renders applicant's claims unpatentable.

In response to applicant's assertion (page 6, line 15) that the recitation to conductors printed on the insulating layer is not addressed, the examiner disagrees. Carroll teaches (column 1, line 16) that it is known to have conductors printed onto a dielectric substrate.

In response to applicant's assertion (page 6, line 18) concerning that the recitation so that a thin layer of conductive material resides on an interior surface of the on of the insulating layers is not obvious, the examiner disagrees. Applicant's remark is seen to imply that the “flat conductors 11” (column 3, line 34) of Schauer are not thin and this is not correct. Schauer specifically states (column 3, line 35) that the conductors 11 inside the cable 10 are “particularly thin”.

In response to applicant's assertion (page 6, lines 22-25) that “none of Schauer, Applicant's Admitted Prior Art, Carroll or any combination thereof teaches or suggest” the claimed structure, the examiner disagrees. As discussed above, the prior art shows the structure and it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the structure in the same manner as outlined by applicant's claims. All subject matter that is the equivalent of the subject matter as defined in the claim, even though specifically different from the definition in the claim, must be considered unless expressly excluded by the claimed subject matter. See MPEP § 2181 - § 2184.

In response to applicant's assertion (page 7, line 16)) concerning that the recitation so that a thin layer of conductive material resides on an interior surface of the on of the insulating layers is not obvious, the examiner disagrees. Applicant's remark is seen to imply that

the “flat conductors 11” (column 3, line 34) of Schauer are not thin and this is not correct.

Schauer specifically states (column 3, line 35) that the conductors 11 inside the cable 10 are “particularly thin”. Further, Schauer shows (cover sheet) conductors 11 illustrated as dashed line that are seen to be adjacent to the interior surface of the insulating layer of ribbon cable 10.

In response to applicant's assertion (page 7, line 10) that Schauer is “likely” to use an adhesive layer, this remark is seen to be without merit because Schauer is not seen to mention an adhesive layer.

In response to applicant's assertion (page 13-18) the Schauer and Applicant's Admitted Prior Art do not show printed conductors, this remark is seen to be without merit. One cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references. In re Keller, 208 USPQ 871 (CCPA 1981). The rejection is based upon Schauer, Applicant's Admitted Prior Art and Carroll. Carroll teaches (column 1, line 16) that it is known to have conductors printed onto a dielectric substrate and the combination of the references renders applicant's claims unpatentable.

In response to applicant's assertion (page 7, line 20-25) concerning that Carroll does not show conductors between the insulation, is seen to be without merit. One cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references. In re Keller, 208 USPQ 871 (CCPA 1981). Further, Schauer shows (cover sheet) conductors 11 illustrated as dashed line that are seen to be adjacent to the interior surface of the insulating layer of ribbon cable 10.

In response to applicant's assertion (page 8, lines 1-14) concerning that the motivation is not feasible, the examiner disagrees. The Examiner recognizes that references cannot be

arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re.Nomiya, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971).

In response to applicant's assertion (page 8, lines 15-20) that the motivation for combining Carroll with Applicant's Admitted Prior Art and Schauer is illogical, the examiner disagrees. One skilled in the art knows that the thinner a structure is generally equates to flexibility. The printed conductors of Carroll are seen to be thinner than the conductors of Applicant's Admitted Prior Art and Schauer and therefor results in a more flexible cable than is seen to be shown by either Applicant's Admitted Prior Art or Schauer.

In response to applicant's assertion (page 8, lines 21-24) that one skilled in the art would have been motivated to combine Schauer, Applicant's Admitted Prior Art, and Carroll the examiner disagrees. Schauer, Applicant's Admitted Prior Art, and Carroll disclose applicant's structure and it would have been obvious to one of ordinary skill in the art before the invention was made to combine the references in the same broad manner as applicant has chosen to claim.

In response to applicant's assertion (page 9, lines 4-12), these remarks have not convinced the examiner that the claims are allowable over the prior art of Schauer, Applicant's Admitted Prior Art, and Carroll. Applicant's claim language only requires the contacts to be curved. Schauer shows contacts (cover sheet) that are curved. The contacts are vertical at 21, horizontal near lead line of numeral 20, vertical near the lead line of numeral 14 and horizontal

near the lead line of numeral 15; between the vertical and horizontal sections are curves that change the direction from vertical to horizontal.

In response to applicant's assertion (page 9, lines 14-18) that the combination of Schauer, Applicant's Admitted Prior Art, and Carroll do not teach soldering, the examiner disagrees. Schauer teaches soldering (column 4, line 53) and to assert that given the teachings of Schauer, Applicant's Admitted Prior Art, and Carroll, one skilled in the art would not have been able to understand how Schauer is soldered to conductors is not seen to advance the prosecution of applicant's invention and does not convince the examiner that the claimed structure is allowed.

In response to applicant's assertion (page 9, line 24 and page 10, lines 1-8) that Carroll teaches away from soldering, this argument is seen to be without merit because Claims 5 and 9 do not claim soldering.

In response to applicant's assertion (page 10, lines 9-24 and page 11, lines 1-6) that the combination of references does not make claim 10 unpatentable, the examiner disagrees. Applicant's argument is seen to be based upon the chosen words of mounting header and that it requires some type of limitation that requires the extensions to be characterized as opposite extreme portions, this argument is seen to require importation of applicant's specification into applicant's claims. Substantially, every claim includes within its breadth or scope one or more variant embodiments that are not disclosed in the application, but which would anticipate the claimed invention if found in a reference. The claim must be so analyzed and any such variant encountered during the search should be recognized. *In re Application filed November 16, 1945*, 89 USPQ 280, 1951 C.D. 1, 646 O.G. 5 (Comm'r Pat. 1951). All subject matter that is

the equivalent of the subject matter as defined in the claim, even though specifically different from the definition in the claim, must be considered unless expressly excluded by the claimed subject matter. See MPEP § 2181 - § 2184. Applicant's argument fails to explain how Muzslay is expressly excluded by applicant's claimed subject matter.

Further, Muzslay is seen as a teaching element that teaches that prior to applicant's invention, it was known in the art that flat cables can have two extensions. To argue that Muzslay teaching do not apply to applicant's invention is not correct. It has been held that the test for obviousness is not whether the features of one reference may be bodily incorporated into the other to produce the claimed subject matter but simply what the combination of references makes obvious to one of ordinary skill in the pertinent art. In re Bozek, 163 USPQ 545 (CCPA 1969). In this instance, the combination of Muzslay and the other references makes applicant's subject matter of claim 10 unpatentable. Therefore, the combination of reference is seen to make applicant's claimed structure unpatentable.

Conclusion

- The prior art is made of record, but not relied upon in the rejection, because it shows that prior to applicant's claimed invention, it was known to either surface mount to circuit traces or through hole mount on a substrate for establishing an electrical connection to circuit traces.
- **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

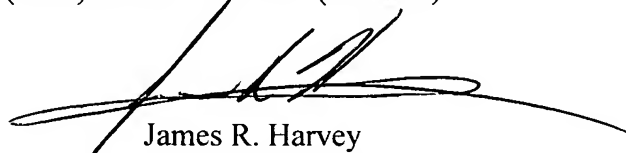
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

- Any inquiry concerning this communication or earlier communications from the examiner should be directed to James R. Harvey whose telephone number is 571-272-2007. The examiner can normally be reached from 8:00 A.M. To 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on 571-272-2800 extension 33.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2800.

- All patent application related correspondence transmitted by facsimile must be directed to the central facsimile number, (571) 273-8300, with a few exceptions. Replies to Office actions including after-final amendments that are transmitted by facsimile must be directed to the central facsimile number. Unofficial correspondence such as draft proposed amendments for interviews may continue to be transmitted by facsimile to the Technology Centers.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James R. Harvey
Primary Examiner

jrh
October 29, 2006